

VISGRAF Laboratory

Luiz Velho
IMPA

VISGRAF @ 21

from
Hard Core Graphics
to
New Media Authoring

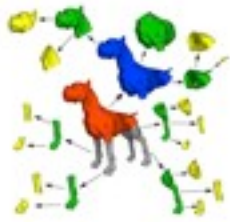
(some recent projects - 2009 / 2011)

Graphics

- Shape Segmentation
- Surface Reconstruction
- Illustrative Rendering
- Physically-Based Lighting
- Interactive Terrain Modeling

Shape Analysis

- "Surface Spectral Analysis and Applications in Computer Graphics"
Fernando de Goes, M.S. (2009)



Semantic Segmentation



Skeleton Extraction

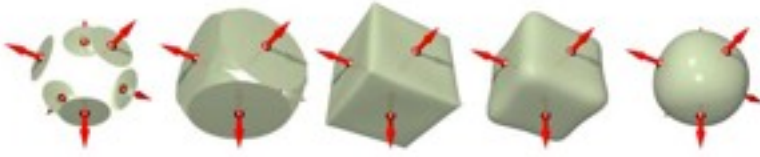


Texturing & Remeshing

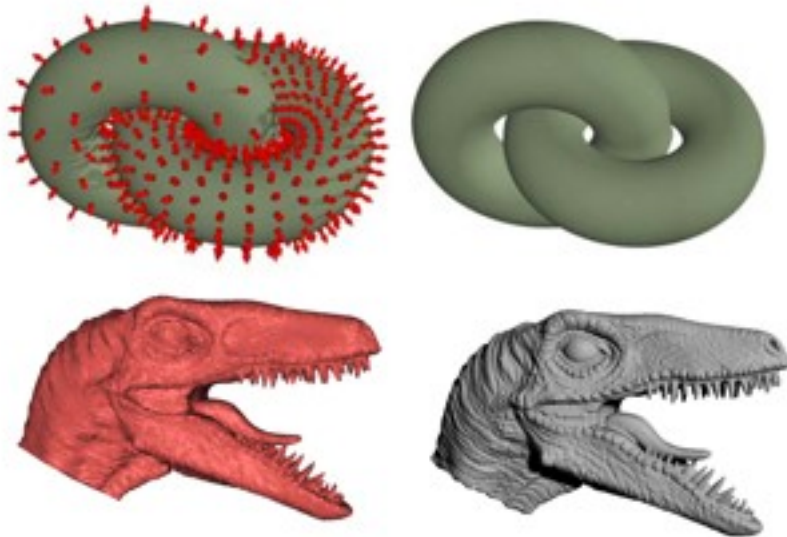


Surface Reconstruction

- "Interpolation of implicit surfaces using radial basis functions"
Ives Macedo Jr., Ph.D. (2011)

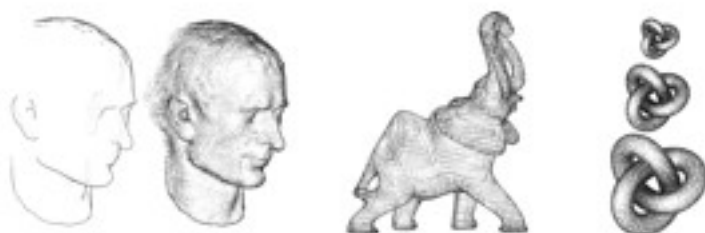


HRBF - Interpolation from Points and Normals



Illustrative Rendering

- "Shape and Tone Depiction for Implicit Surfaces"
Emilio Vital Brazil, Ph.D. (2011)

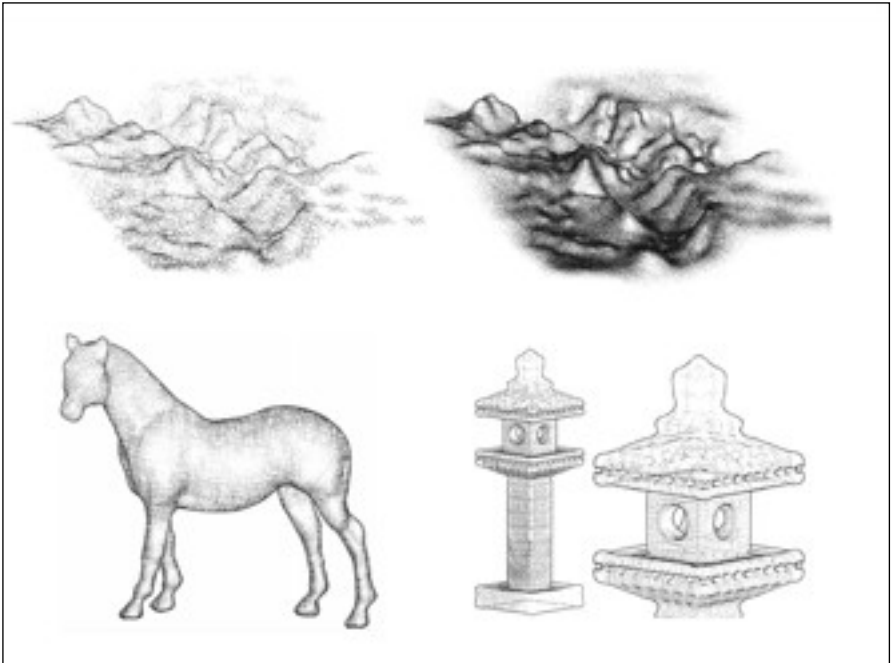


Lines

Points

Texture

Multi-Sampling

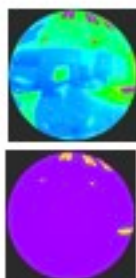


Realistic Illumination

- "Hybrid Scheme for Photorealistic Rendering with Light Maps"
Aldo Zang, M.S. (2009) - best dissertation award



Light Probe

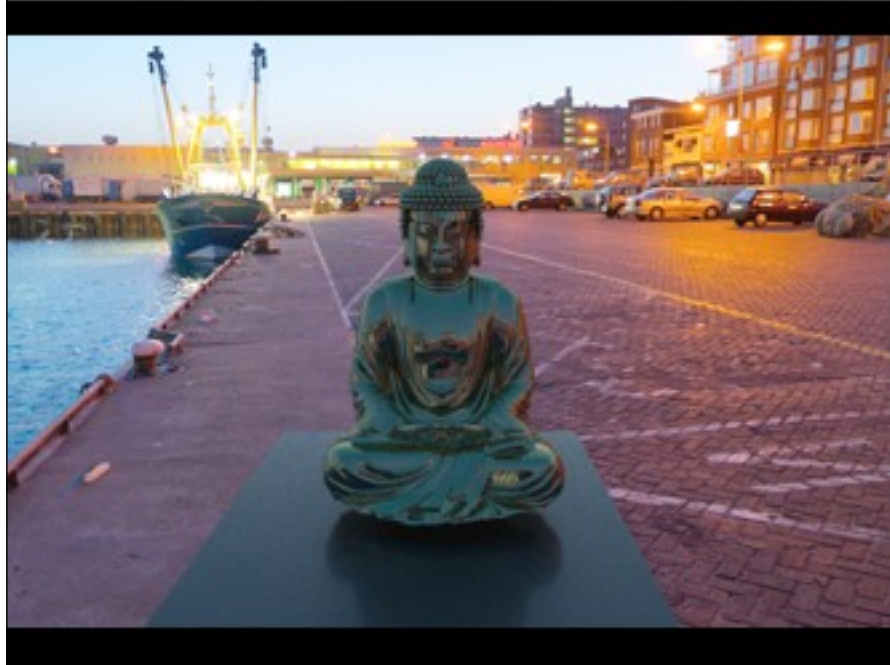


Dual Map



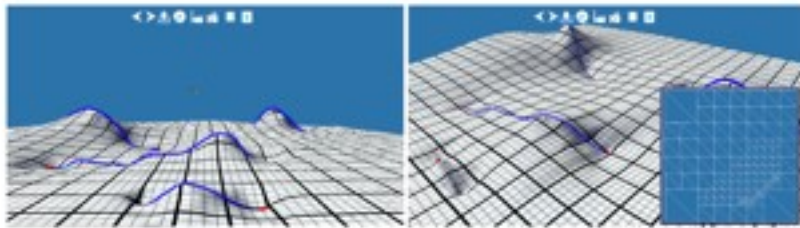
Rendered Image





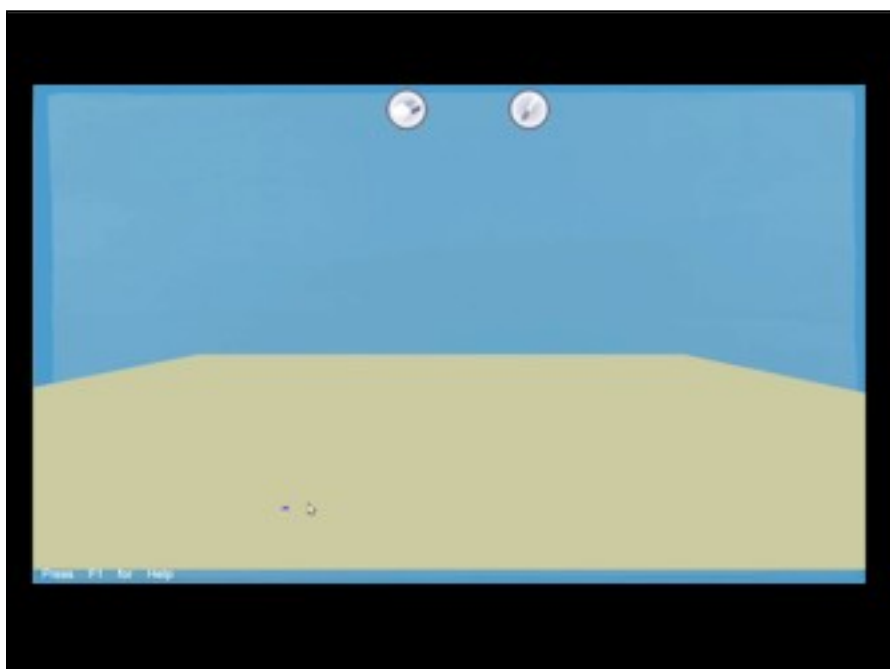
Terrain Modeling

- "Sketch-Based Free-Form Modeling of Terrain"
Adrien Bernhardt, Ph.D. (ongoing)



Strokes + Poisson Solver

CPU / GPU Computation



Media

- Panoramic Images and Video
- Dance & Choreography
- Music Performance

N-Pan Project

- Gigapixel Panoramas and Narratives
 - IMPA / ESDI Collaboration
- Goals:
 - Push the Limits of Technology
 - Explore Novel Media Formats
 - Test New Authoring Systems

Authoring Tools

- "PanoSuite - A Production Pipeline for Panoramas"
Rodolfo Schulz - Digitok (2009)



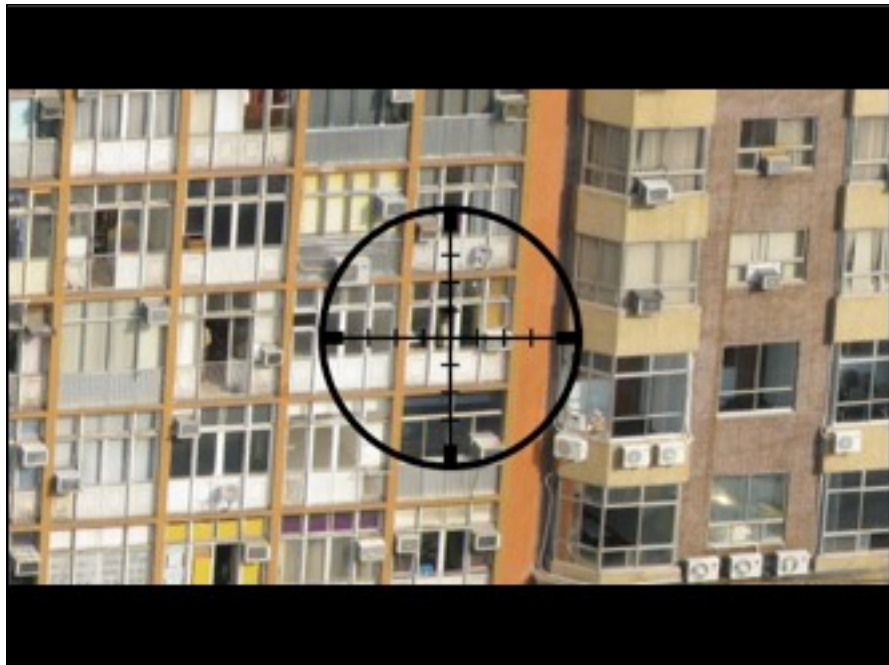
PanoStitch



PanoView



PanoAuthor

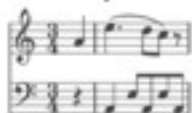


Choreography

- "Motion Capture Based Framework for Group Dance Creation"
Adriana Schulz, M.S. (ongoing)



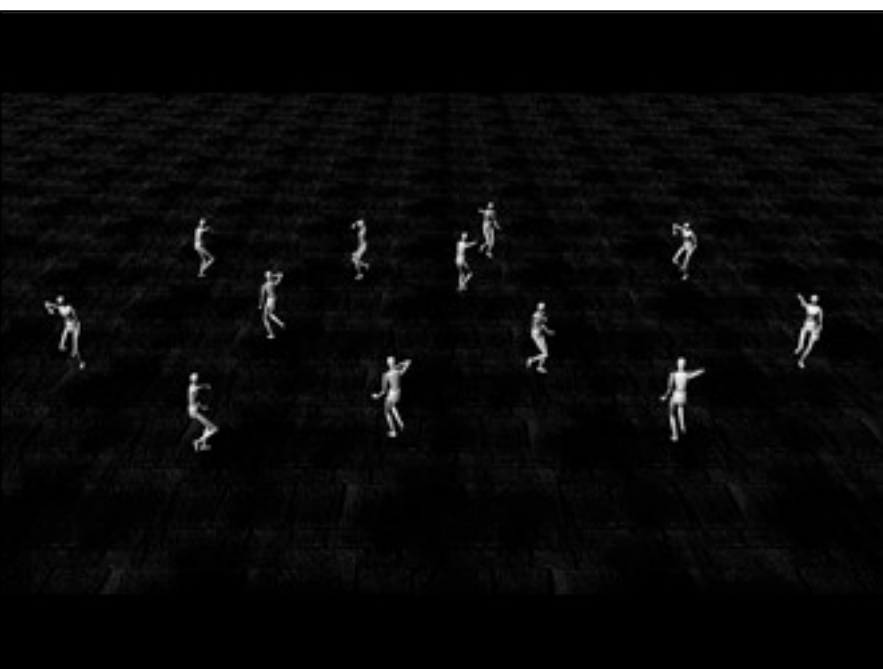
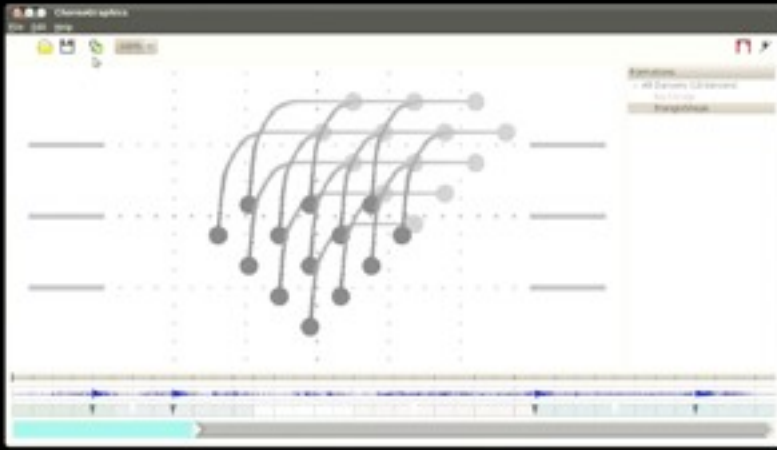
Dance



Music

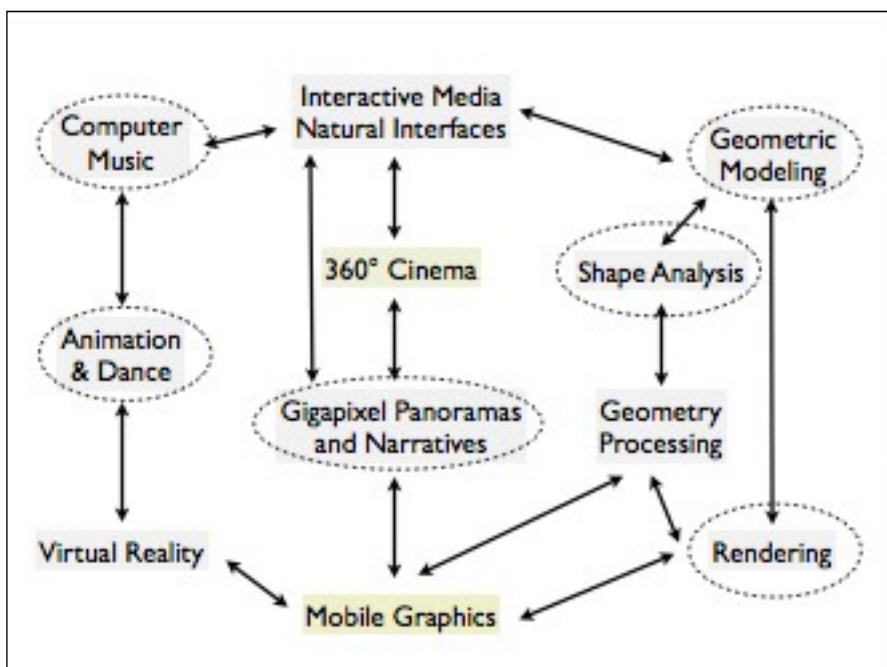
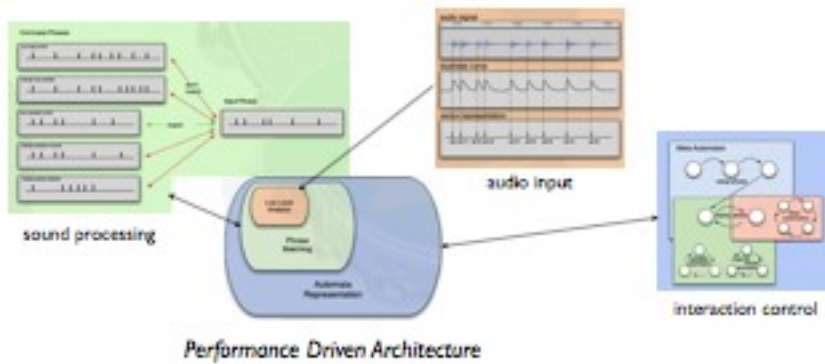


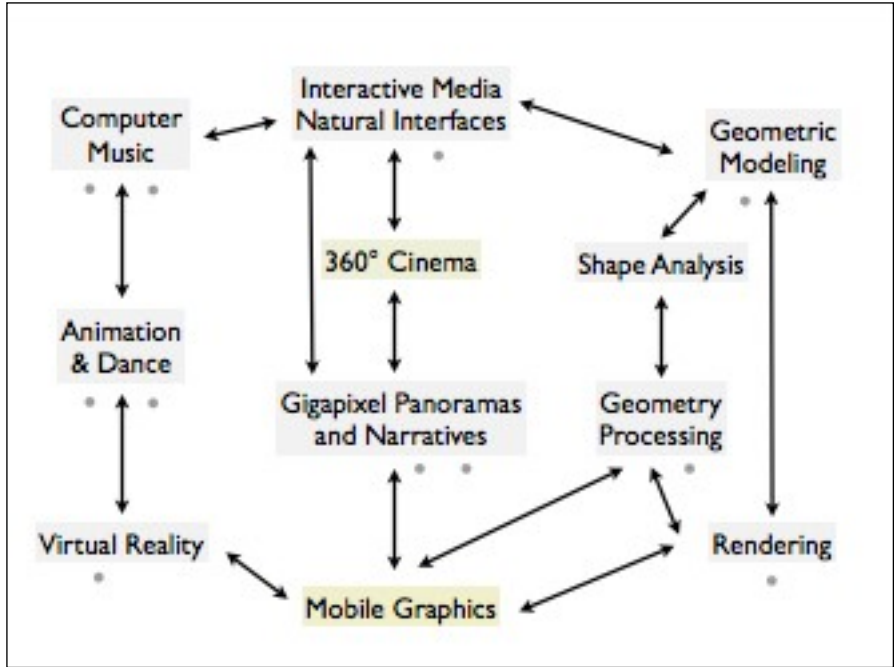
ChoreoGraph



Music

- "Rhythm-Controlled Automata Applied to Musical Improvisation"
Sergio Krakowski, Ph.D. (2009)





to be continued....